TYPE I PROGRESS REPORT FOR ERTS-I INVESTIGATION FOR THE PERIOD ENDING AUGUST 15, 1973

Submitted by Y.W. Isachsen, N.Y.S. Geological Survey
Museum and Science Service

A. Objective: To evaluate ERTS-I data for usefulness as a geological sensor in the diverse geological terranes of New York State.

B. GSFC ID S348, NAS 5-21764

C. Problems: We are still awaiting cloud-free imagery (non-winter) for the western part of the State in order to prepare a publishable mosaic of the entire State for the growing season.

D. Accomplishments:

1. To date, more than 3800 ERTS-I film products have been reviewed, covering 287 frames over 34 image areas. All have been catalogued and categorized in terms of geological usefulness. All except those received in August have received preliminary examination for geological content, and those for the Adirondacks have been annotated for geological information.

2. A 75-page Type II report was prepared and submitted to NASA, covering accomplishments through May, 1973.

3. Spectral geological maps were completed at 1:500,000 and 1:250,000 for the Adirondacks (four scenes, bands 7 and 5) and for southeastern New York State (one scene, Catskills to New York City).

4. Several hundred low-level oblique aerial photographs were taken of ERTS-I linear anomalies in the Adirondacks, where the majority of anomalies occur, and in the Catskills.

5. The Cranberry Lake circular feature was searched additionally for shatter cones; none have yet been found.

6. Supportive high and intermediate altitude aerial photography has been received, catalogued, and given preliminary scrutiny. It appears to be of very high quality!

E. Planned:

1. Completion of 1:500,000 and 1:250,000 spectral geological maps of the entire State.

2. Evaluation of ERTS-I anomalies using the high and intermediate altitude aerial photography recieved from NASA.

8pp.

ERTS-I Data User Investigation Publication and Information Release Policy

EVALUATION OF ERTS IMAGERY FOR SPECTRAL GEOLOGICAL MAPPING IN DIVERSE TERRANES OF NEW YORK STATE

Y.W. Isachsen, R.H. Fakundiny, S.W. Forster

Linear anomalies dominate the new geological information derived from ERTS-I imagery, total lengths now exceeding 6000 km. Experimentation with a variety of viewing techniques suggests that conventional photogeologic analyses of band 7 results in the location of more than 97 percent of all linears found. Bedrock lithologic types are distinguishable only where they are topographically expressed or govern land-use signatures. The maxima on rose diagrams for ERTS-I anomalies correspond well with those for mapped faults and topographic lineaments, despite a difference in relative magnitudes of maxima thought due to solar illumination direction. A multiscale analysis of linears showed that single topographic linears at 1:2,500,000 became dashed linears at 1:1,000,000 aligned zones of shorter parallel, en echelon, or conjugate linears at 1:500,000, and shorter linears lacking any conspicuous zonal alignment at 1:250,000. Most circular features found were explained away by U-2 airphoto analysis but several remain as anomalies. Visible glacial features include individual drumlins, best seen in winter imagery, drumlinoids, eskers, ice-marginal drainage channels, glacial lake shorelines and sand plains, and end moraines.

NOTE: This is the abstract which was submitted with our Type II report on June 28, 1973.

3. Continuing low-level aerial reconnaissance and photography of ERTS-I anomalies, and ground investigation of representative examples.

F. Publications and Lectures:

1. Popular lectures on remote sensing and the ERTS-I experiment at the Atmospheric Sciences Research Center of the State University of New York at Albany at Whiteface Mountain, and the Rogers Environmental Center at Sherburne, New York.

2. Extracted portions of the recently-sumitted NASA Type II report for a paper by Y.W. Isachsen titled: "Spectral Geological Content of ERTS-I Imagery Over a Variety of Geological Terranes in New York State" which was submitted for publication in the American Society of Photogrammetry Symposium Volume on "Management and Utilization of Remote Sensing Data". Because of the expense involved, and because it would repeat information already in NASA's hands, the above manuscript is not submitted herewith. The paper will appear in October, however, and reprints will be submitted with the next Type I report.

G. Recommendations: None at this time.

H. Standing Order: No change.

I. ERTS Image Descriptor Forms: Attached, five pages.

J. Data Request Form: None submitted during reporting period.

K. Content of Report: Falls under retrieval category 3K.

L. Author Identified Significant Results: Attached is the abstract of our Type II report which was submitted on 28 June 73.

ERTS IMAGE DESCRIPTOR FORM

(See Instructions on Back)

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DATE 15 Aug 73

PRINCIPAL INVESTIGATOR Y.W. Isachsen

GSFC ST 348

ORGANIZATION Geol. Survey, N.Y. State Museum & Science Service

PRODUCT ID (INCLUDE BAND AND PRODUCT)	FREQUENTLY USED DESCRIPTORS*			DESCRIPTORS
	Ridge	Linmnt.	Fold	
1007-15113-5	✓	✓		Airfield.
1008-15171-5	✓	✓		
1008-15174-5				Barrier Bar.
1046-15301-5	✓	✓	✓	
1172-15292-5	✓	✓	✓	Drumlin, Finger Lake, Snow.
1173-15353-5				Snow.
1184-14562-5				Atlantic Ocean.
1187-15122-5	✓	✓		
1187-15124-5	✓	✓		
1187-15131-5	✓	✓	✓	Coast.
1187-15133-5	✓	✓	✓	Barrier Bar, Barrier Island, Coast, Coastal Plain.
1188-15174-5				Excessive Cloud Cover.
1188-15180-5	✓	✓		Frozen Lake.
1188-15183-5	✓	✓		Barrier Bar.
1188-15185-5				Excessive Cloud Cover.
1190-15293-5	✓	✓	✓	Drumlin, Frozen Lake, Snow.
1190-15300-5				Drumlin, Snow.
1191-15352-5				Drumlin, Frozen Lake, Snow.
1192-15413-5				Barrier Bar, Snow.
1202-14564-5				Excessive Cloud Cover.
1203-15020-5				Coast, Frozen Lake, Snow.
1204-15072-5	✓	✓		Frozen Lake, Snow.
1204-15074-5	✓	✓		Barrier Bar, Coast, Frozen Lake, Snow.
1204-15081-5	✓	✓		Barrier Bar, Coast.
1205-15132-5	✓	✓	✓	Coast, Frozen Lake, Snow.

*FOR DESCRIPTORS WHICH WILL OCCUR FREQUENTLY, WRITE THE DESCRIPTOR TERMS IN THESE COLUMN HEADING SPACES NOW AND USE A CHECK (✓) MARK IN THE APPROPRIATE PRODUCT ID LINES. (FOR OTHER DESCRIPTORS, WRITE THE TERM UNDER THE DESCRIPTORS COLUMN).

MAIL TO ERTS USER SERVICES
CODE 563
BLDG 23 ROOM E413
NASA GSFC
GREENBELT, MD. 20771
301-982-5406

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PRODUCT ID (INCLUDE BAND AND PRODUCT)	FREQUENTLY USED DESCRIPTORS*			DESCRIPTORS
	Ridge	Linmnt.	Fold	
1205-15135-5	✓	✓	✓	Barrier Bar, Barrier Island, Coast, Coastal Plain, Frozen Lake.
1206-15175-5	✓	✓	✓	Alluvial Plain, Frozen Lake, Snow, Terrace.
1206-15182-5	✓	✓		Frozen Lake, Snow.
1206-15184-5	✓	✓		Barrier Bar, Finger Lake, Frozen Lake, Snow.
1206-15191-5	✓			Finger Lake, Frozen Lake, Snow.
1206-15193-5	✓		✓	
1208-15295-5	✓	✓	✓	Frozen Lake, Snow.
1209-15353-5	✓	✓	✓	Drumlin, Frozen Lake, Snow.
1209-15360-5				Barrier Bar, Snow.
1209-15362-5		✓		Frozen Lake, Snow.
1221-15023-5				Barrier Bar, Coast.
1222-15075-6	✓	✓		Coast, Barrier Bar, Frozen Lake.
1225-15235-5	✓	✓	✓	Alluvial Plain, Frozen Lake, Snow.
1225-15241-5	✓	✓	✓	Barrier Bar, Frozen Lake, Snow.
1239-15021-5				Barrier Bar, Coast.
1239-15024-5				Barrier Bar, Coast.
1240-15082-5				Barrier Bar, Coast.
1241-15123-5				Frozen Lake, Snow.
1243-15235-5	✓	✓	✓	Alluvial Plain, Frozen Lake, Snow.
1243-15242-5	✓	✓	✓	Barrier Bar, Frozen Lake, Snow.

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	Ridge	Linmnt.	Fold	
1243-15244-5		✓		Barrier Bar, Drumlin, Finger Lake, Moraine, Snow.
1243-15251-5	✓	✓	✓	Anticline, Finger Lake, Snow, Syncline.
1243-15253-5	✓	✓	✓	Anticline, Snow, Syncline.
1244-15300-5	✓	✓	✓	Drumlin, Frozen Lake, Snow.
1244-15303-5		✓		Drumlin, Finger Lake, Snow.
1244-15305-5		✓		Snow.
1257-15015-5				Coast, Frozen Lake, Snow.
1257-15021-5				Barrier Bar, Coast, Snow.
1257-15024-5				Barrier Bar, Coast, Moraine.
1258-15071-5	✓	✓		Frozen Lake, Snow.
1258-15073-5	✓	✓		Snow.
1258-15080-5	✓	✓		Barrier Bar, Coast, Snow.
1258-15082-5	✓	✓		Barrier Bar, Coast.
1260-15181-5	✓	✓		Frozen Lake, Snow.
1260-15183-5	✓	✓	✓	Frozen Lake, Snow.
1260-15190-5	✓	✓		Barrier Bar, Finger Lake, Frozen Lake, Snow.
1260-15192-5	✓	✓	✓	Anticline, Finger Lake, Syncline.
1260-15195-5	✓	✓	✓	Anticline, Syncline.
1263-15355-5	✓	✓	✓	Frozen Lake, Snow.
1263-15361-5				Barrier Bar.
1274-14565-5				Coast, Barrier Bar.

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	Ridge	Linmnt.	Fold	
1259-15123-5	/	/		Frozen Lake, Snow.
1275-15021-5		/		Barrier Bar, Coast.
1275-15023-5				Barrier Bar, Coast.
1276-15073-5	/	/		
1276-15075-5		/		Barrier Bar, Coast.
1277-15122-5	/	/		Frozen Lake, Snow.
1280-15302-5		/		
1280-15311-5	/	/	/	Anticline.
1294-15081-5	/		/	Barrier Bar, Coast.
1297-15240-5	/	/	/	
1297-15243-5		/		Barrier Bar Finger Lake.
1297-15245-5	/	/	/	Anticline, Finger Lake, Syncline.
1297-15252-5	/	/	/	Anticline, Syncline.
1311-15012-5				Barrier Bar, Coast.
1311-15015-5		/		Barrier Bar, Coast.
1311-15021-5				Barrier Bar, Coast.
1313-15134-5		/		Barrier Bar, Coast, Coastal Plain.
1314-15174-5	/	/	/	
1314-15181-5	/	/	/	
1314-15183-5	/	/		Barrier Bar.
1315-15233-5	/	/	/	
1315-15235-5	/	/	/	
1315-15242-5		/		Barrier Bar, Finger Lake.
1317-15361-5				Barrier Bar.
1329-15011-5				Barrier Bar, Coast.
1329-15014-5				Barrier Bar, Coast.
1348-15064-5		/		
1348-15071-5		/		Barrier Bar, Coast.
1348-15073-5		/		Barrier Bar, Coast.

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	Ridge	Linmnt.	Fold	
1351-15230-5 1351-15235-5		/		Barrier Bar, Finger Lake.

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